secondary non home-based trips. These are internally generated trips made by vehicles garaged outside the planning area. They are added to the internally produced non home-based trips and distributed to each zone based on each zone's relative attractiveness as determined by the internal regression equation. Zonal productions are developed automatically in a program developed by the NCDOT. This program is call the Internal Data Summary. Table B6 and B7 shows the IDS calculations for 1991 and 2020, respectively.

Secondary NHB Trip Equation:

Secondary NHB Trips = 0.4 x (Total Ext-Int Trips - Ext-Int Trips Garaged Inside Planning Area)

The internal regression equation used in trip productions was developed by Dr. Leftwich at the University of Central Florida at Orlando. The old study had an existing regression equation that was developed using the external origins and destinations survey. Dr. Leftwich's equation was developed using travel data gathered from 16 urban area in North Carolina. This equation was calibrated for the new planning area which resulted in the internal trip equation and external-internal equation being slightly different.

The Multiple Regression Equations used:

HBW: Trip Attractions = Total Employment for each zone

OHB: $Y = (0.5)X_1 + (1.83)X_2 + (8.36)X_3 + (2.6)X_4 + (2.55)X_5 + (0.5)X_{10}$

NHB: $Y = (1.0)X_1 + (1.83)X_2 + (8.36)X_3 + (2.6)X_4 + (2.55)X_5 + (0.1)X_{10}$

E-I: $Y = (1.5)X_1 + (1.83)X_2 + (8.36)X_3 + (2.6)X_4 + (2.55)X_5 + (1.5)X_{10}$

Where, Y = Attraction Factor

X_1 = Industrial
X_2 = Other Retail
X_3 = Highway Retail
X_4 = Office
X_5 = Service
X_{10} = Dwelling Unit

Trip Attractions

The HBW attraction factors are total employment within each zone. Factors for OHB, NHB, and external-internal (E-I) purposes were developed using the multiple regression equation "borrowed" from Dr. Leftwich's analysis. The regression analysis uses zonal employment and housing as the independent variables and computes an estimate of trips attracted as the dependent variable. Total attractions are balanced to equal total productions by purpose. The balanced trip attractions from this analysis are shown in the first four columns of Tables B4 and B5 - IDS Calculations.